

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GEORGE E. BARBOUR

Appeal No. 95-4020
Application No. 08/096,337¹

ON BRIEF

Before JOHN D. SMITH, GARRIS and WARREN, Administrative Patent Judges.

GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the refusal of the examiner to allow claims 1, 3 through 6, 10 through 13 and 15 through 20 as amended subsequent to the final rejection. These are all of the claims remaining in the application.

¹ Application for patent filed July 23, 1993.

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The subject matter on appeal relates to a method of carburizing ferrous metal parts in a furnace having a process chamber which comprises: providing an endothermic carrier gas formed by partial reaction of fuel gas and air in an externally heated catalyst filled chamber and feeding the carrier gas into the process chamber so as to provide a furnace atmosphere having a carbon potential of at least about .5%; and providing a source of air and a source of enriching gas and feeding the air and the enriching gas simultaneously to the process chamber so as to raise the carbon potential of the furnace atmosphere by at least about .1%. This appealed subject matter is adequately illustrated by independent claim 1 which reads as follows:

1. A method of carburizing ferrous metal parts in a furnace having a process chamber in which the ferrous metal parts are carburized comprising the steps of:

i) heating the process chamber to a temperature in excess of about 1100°F;

ii) charging the ferrous parts to be carburized into the process chamber;

iii) providing a carrier gas comprising an endothermic carrier gas formed by partial reaction of fuel gas and air in an externally heated catalyst filled chamber, and feeding the carrier gas into the process chamber so as to provide a furnace atmosphere in the process chamber having a dew point and having a carbon potential of at least about .5%;

iv) providing a source of air and a source of enriching gas and feeding the air and the enriching gas simultaneously to the

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process chamber so as to raise the carbon potential of the furnace atmosphere in the process chamber by at least about .1%; and

v) discharging the ferrous metal parts from the furnace.

The references relied upon by the examiner as evidence of obviousness are:

European patent (Stickles)	024,106	Feb. 25, 1981
British patent (Paterson)	2,076,023	Nov. 25, 1981
German patent (Mueller)	205,187	Dec. 12, 1983

Kühn, "Carburizing with Direct-feed Mixtures of Natural Gas and Air," Heat Treatment of Metals, (1993.2) pp. 39-44.

Metals Handbook, "Gas Carburizing," Ninth Edition, Vol. 4 (1979) pp. 135-175.

The appealed claims are rejected under 35 U.S.C. § 103 as being unpatentable over Kühn or alternatively as being unpatentable over Stickles or Mueller or Paterson in view of the Metals Handbook.

None of the above noted rejections can be sustained.

As correctly indicated by the appellant, the applied prior art contains no teaching or suggestion concerning the here claimed step iii) of providing an endothermic carrier gas formed by partial reaction of fuel gas and air and feeding the carrier gas into the process chamber in combination with the here claimed step iv) of feeding an air and enriching gas simultaneously into

the process chamber so as to raise the carbon potential of the furnace atmosphere. Instead, the primary references generate a furnace atmosphere basically by injecting a hydrocarbon gas and oxygen directly into the process chamber.

In this regard, it is the examiner's position that "the instant claimed carrier gas and enriching gas are [both] fuel gas as defined by the appellant" and that, "[c]onsequently, with respect to the instant [independent] claims 1 and 15, steps iii) and iv) read on providing a mixture of fuel gas with air" (Answer, page 6). This is clearly erroneous. Each of the independent claims on appeal explicitly defines the carrier gas as "formed by partial reaction of fuel gas and air." As a result, the claimed step of "feeding the carrier gas into the process chamber" requires feeding the aforementioned partial reaction product and thus plainly would not "read on providing a mixture of fuel gas with air" as urged by the examiner.

In addition to the foregoing, the examiner points out that the applied references show that it was known in the prior art to form carrier gas in an externally heated chamber (e.g., see the paragraph bridging pages 6 and 7 of the Answer). We appreciate this fact which was also pointed out by the appellant in the background section of his specification. However, we find

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nothing and the examiner points to nothing in the applied references which would have suggested modifying this prior art practice in such a manner as to result in the here claimed method and, in particular, steps iii) and iv) thereof.

For the reasons set forth above, we cannot sustain the examiner's § 103 rejection of the appealed claims based upon Kühn or alternatively based upon Stickles or Mueller or Paterson in view of the Metals Handbook.

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The decision of the examiner is reversed.

REVERSED

JOHN D. SMITH)	
Administrative Patent Judge))	
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BRADLEY R. GARRIS)	BOARD OF PATENT
Administrative Patent Judge))	APPEALS AND
)	INTERFERENCES
)	
)	
CHARLES F. WARREN)	
Administrative Patent Judge))	

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